

Application No.: 10/727,292

Docket No.: JCLA12308-R2

REMARKS**Present Status of the Application**

All pending claims 1, 2 and 11 were rejected under 35 U.S.C. 103(a) as being unpatentable over Shen (US 6,013,771) in view of Lee (US 6,413,557) and Obata (US 6,444,239). In response, Applicants have rewritten claim 1 and submitted the following remarks. Reconsideration of claims 1, 2 and 11 is respectfully requested.

Discussion of Rejections under 35 U.S.C. 103(a)

In the Office Action, Examiner considered that Shen discloses i) producing from a soybean material an isoflavone rich protein material which is extracted with an aqueous extract and then separated from the *insoluble material* to produce an extract containing isoflavones and protein, and ii) the separation of precipitated protein material from the extract at cool or cold temperatures unexpectedly significantly increases the amount of isoflavones trapped in the separated protein material.

However, Applicants respectfully point out that the *insoluble material* in Examiner's above opinions should refer to *the residue of the soybean material after being extracted* in Shen, while the insoluble materials in claim 1 do not mean the residue of the soybean material *but should be equivalent to the precipitates formed at low temperatures in Shen*.

Therefore, Applicants have rewritten claim 1 for clarification, wherein *the extraction step*,

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the step of forming insoluble materials and the step of removing insoluble materials but recovering soluble materials are clearly divided in amended claim 1. In addition, the added description about the isoflavone amount in total solid content is supported by paragraph [0022].

There are mainly three features in amended claim 1 as discussed below.

1. One feature of amended claim 1 is that the insoluble materials, which are formed as the pH value and the temperature of the soybean extract liquid are adjusted, are *removed* from the soybean extract liquid but soluble materials are *recovered*.

Shen removes the residue of a soybean material as in amended claim 1, but teaches away the above feature. Shen *removes* the liquid part containing soluble materials but *recovers* the precipitates (insoluble materials) from the low-temperature soybean extract liquid, for believing that low temperatures greatly increase the amount of the isoflavones trapped in the separated protein material (col. 3, lines 16-26). Therefore, Shen's method is exactly contrary to the method of this invention. It is particularly noted that according to the context in amend claim 1 and dictionaries, the verb "remove" in claim 1 should be similar to the verb "discard" but *contrary* to the verb "recover" in the definition.

Moreover, since Shen teaches that the precipitates are rich in isoflavones, one in view of Shen has no motivation to remove the precipitates (=insoluble materials) as in claim 1.

Lee, which was cited for the feature of soybean hypocotyls, also fails to teach or imply the above feature of claim 1. Obata also fails to teach or imply the feature. Obata teaches in the

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Abstract to recover, rather than remove, the water-insoluble matter (= precipitates or insoluble materials), as in the case of Shen.

Accordingly, the above feature of amended claim 1 is non-obvious over each or the combination of Shen, Lee and Obata.

2. Another feature of amended claim 1 is that insoluble materials are removed but soluble materials recovered after the pH value and the temperature of the soybean extract liquid are adjusted to 5.5-7 and 0-17°C, respectively.

Shen fails to teach the above feature. Shen teaches to adjust the pH value of the soybean extract liquid to the isoelectric point of the protein that is between 4.0 and 5.0 (col. 4, lines 51-62), *because Shen is intended to precipitate most proteins so that most isoflavones co-precipitate with the proteins to form isoflavone-rich protein precipitate (insoluble materials) that is desired by Shen.* In such a case, the isoflavone content in the liquid part is so low that the liquid part is not worth recovering for the soluble materials including isoflavones.

Lee also fails to teach the above feature. Lee even mentions nothing about forming precipitate or insoluble materials from a soybean extract liquid.

Obata also fails to teach the above feature. Obata teaches to adjust the pH value of the soybean extract liquid to 2.0-6.0 and the temperature of the same to 50°C or higher (claims 3 and 4) for the activity of the protease and the β -glucosidase.

Accordingly, the above feature of amended claim 1 is non-obvious over each or the combination of Shen, Lee and Obata.

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3. Still another feature of amended claim 1 is that the soybean hypocotyls are extracted by water without a physical treatment.

Shen fails to teach or imply the above feature. Since soybean flakes are used in the Examples of Shen and soybean flakes *must be obtained with a physical treatment*, the soybean material in Shen is extracted with a physical treatment, as being contrary to the case of claim 1.

Lee, which was cited for the feature of soybean hypocotyls, also fails to teach or imply the above feature of claim 1.

Obata also fails to teach or imply the above feature. As described in Examples 1-3 in columns 4-5 of Obata, a soybean material like defatted soybeans is *ground* and extracted to obtain a soybean extract liquid. It is sure that a grinding treatment is a physical treatment.

Accordingly, the above feature of amended claim 1 is non-obvious over each or the combination of Shen, Lee and Obata.

Moreover, the above feature is no trivial modification of the prior art. As indicated by [0010] of the specification of this application, when a soybean material that has experienced a physical treatment not destroying soybean cells or even no physical treatment is subjected to water extraction, additional components other than isoflavones contained in the raw material, such as proteins or oils, do not easily exude in large amounts. Therefore, the solubility of the composition containing isoflavones is not lowered, or the recovery ratio of isoflavones is not lowered in the step of removing the insoluble materials.

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For at least the above reasons, Applicants respectfully submit that independent claim 1 patently defines over the prior art.

For at least the same reasons mentioned above, Applicants respectfully submit that claims 2 and 11 dependent from claim 1 also patently define over the prior art.

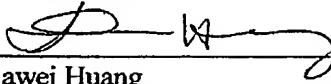
CONCLUSION

For at least the foregoing reasons, it is believed that pending claims 1, 2 and 11 are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

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4 Venture, Suite 250
Irvine, CA 92618
Tel.: (949) 660-0761
Fax: (949)-660-0809

Respectfully submitted,
J.C. PATENTS


Jiawei Huang
Registration No. 43,330